

REMARKS

Applicants have amended claim 1 to add the “still incident on a portion of the electroluminescent element” limitation, which finds support at page 6, lines 16-19, and in FIGS. 3 and 4 of the application, and the “do not lose a layer structure” limitation, which finds support at page 2, lines 6-9, and page 6, line 22 - page 7, line 4, of the specification.

Claims 1-7 have been rejected under 35 USC 103(a) as unpatentable over U.S. Patent No. 6,590,335 (Nagayama) in view of U.S. Patent Publication No. 2002/0142697 (Yamagata) and U.S. Patent Publication No. 2002/0063844 (Matsuura). Applicants respectfully traverse this rejection.

Claim 1 states that the electroluminescent layer comprises a layered structure of a hole transport layer, an emissive layer and an electron transport layer, and during the melting of the electroluminescent layer the hole transport layer, the emissive layer and the electron transport layer are melted together so that the layered structure disappears and the high resistivity region comprising melted constituents of the hole transport layer, the emissive layer and the electron transport layer is formed between the anode layer and the cathode layer. Claim 1 has been amended to state that at the portion of the electroluminescent element on which the laser beam is incident, the anode layer and the cathode do not lose a layer structure thereof and remain on and below the melted constituents of the layered structure.

The Examiner admits that Nagayama fails to disclose the claimed melting of electroluminescent layer. See page 2 of the Action. Furthermore, the Examiner admits that Yamagata fails to disclose the limitation that the layered structure of the hole transport layer, the emissive layer and the electron transport layer disappears during the melting and the high resistivity region comprising melted constituents of the hole transport layer, the emissive layer and the electron transport layer is formed between the anode layer and the cathode layer. See page 3 of the Action.

However, the Examiner contends at pages 5-6 of the Action:

However, the oxidation of Yamagata actually seems to suggest the melting of the light emitting element. Yamagata teaches that the laser irradiation can be used to cause oxidation or complete removal of the film. The power of the laser can be adjusted to uses either method [0059]. The power of the laser essentially affects the rate at which the light emitting element heats up. Excessive heat absorbed in the light emitting element would cause vaporization of the element. This method is analogous to the melting and evaporation of ice. When heat is applied to ice, it melts. When the heat is applied to the melted ice, it evaporates. The melting of the ice is a process of a lesser degree to that of the evaporation of the ice.

Applicants believe that the Examiner's position is that Yamagata discloses an oxidation of an electroluminescent layer and a complete removal of that layer, i.e., the complete evaporation of the electroluminescent layer. Because in the Examiner's view ice must melt before it evaporates (ignoring the fact that water vapor may be formed directly from ice by sublimation), it follows that there must be a melting of the electroluminescent layer before Yamagata's electroluminescent layer evaporates. Applicants respectfully disagree.

Claim 1 requires that the layered structure of the hole transport layer, the emissive layer and the electron transport layer disappear during the melting and the high resistivity region including the melted constituents of the layered structure is formed between the anode layer and the cathode layer. Except through an imaginative application of hindsight analogous reasoning, even the Examiner hasn't found a disclosure or suggestion of this limitation in the prior art.

Yamagata may disclose a melting of Yamagata's electroluminescent layer to the extent that it is completely evaporated, but it wholly fails to disclose that after the melting of Yamagata's electroluminescent layer, the melted layer remains between the anode layer and the cathode layer as required by claim 1, because Yamagata's electroluminescent layer evaporates at the end of Yamagata's laser heating as the Examiner admits.

The Examiner also contends that "Ozaki '235 teaches that adjusting the power of a laser can cause either melting or vaporization [0026]. Thus, the oxidation of Yamagata is equivalent to melting of the light emitting element." See page 6 of the Action. Applicants assume that the reference referred to as "Ozaki '235" is U.S. Patent Publication No. 2005/0078235, which is listed in the Form PTO-892 sent with this Action and is not applied formally in the rejection. Applicants respectfully disagree.

First, Ozaki teaches melting and vaporizing of metal layers. Neither Ozaki, Yamagata, Nagayama nor Matsuura discloses that a high resistivity region including the melted constituents of the layered structure of a hole transport layer, an emissive layer and an electron transport layer is formed between an anode layer and a cathode layer. Second, an oxidation of Yamagata's electroluminescent layer is not "equivalent" to the claimed melting of the layered structure because the claimed melting requires that the layered structure disappear during the melting. On the other hand, a mere oxidation of a layered structure does not amount to disappearance of the layered structure. In any event, there is no evidence the prior art recognizes the alleged equivalence on which the Examiner relies.

Furthermore, claim 1 requires that at the portion of the electroluminescent element on which the laser beam is incident, the anode layer and the cathode do not lose a layer structure thereof and remain on and below the melted constituents of the layered structure. Because the Examiner relies on Yamagata's "complete removal of the film" for the teaching of the claimed melting, the part of Yamagata's electroluminescent element on which the laser beam is incident, including the anode layer and the cathode layer, must be completely melted before it evaporates for complete removal. In other words, when Yamagata's electroluminescent element evaporates, all components of it, including the anode layer and the cathode layer, must be melted together. Accordingly, Yamagata fails to disclose the claimed selective melting of the electroluminescent element.

Moreover, the combination of Matsuura's teachings to those of Nagayama and Yamagata is not proper. Claim 1 states that the laser beam is not directly incident on the detected foreign substance. The Examiner admits that Nagayama and Yamagata do not disclose the claimed indirect irradiation. See page 3 of the Action. In the Amendment filed November 21, 2008, applicants explained that Matsuura's laser irradiation is for disconnecting an FET switch in an LCD panel from a pixel having a defective portion and thus is not incident on the pixel itself as claimed, and asked the Examiner to provide a reason persons of ordinary skill in the art would

have combined the teachings of Matsuura, Nagayama and Yamagata to arrive at the claimed invention.

The Examiner responds at page 6 of this Action:

The substitution of equivalents requires no express suggestion (MPEP 2144.06. II). Additionally, Matsuura's [*sic*] teaches that an indirect laser irradiation is capable of electrical isolation (i.e., similar to the results of Nakamura [Nagayama] and Yamagata).

Applicants respectfully disagree.

Matsuura's disconnecting of an FET switch from a pixel having a defective portion by layer irradiation is not an "equivalent" of laser irradiation of a foreign substance taught by Nagayama and Yamagata. In Matsuura's laser irradiation, the entire pixel stops operating because the entire pixel is disconnected from the FET switch. On the other hand, the laser irradiation taught by Nagayama and Yamagata allows the rest of the pixel to emit light. By the same token, Matsuura's laser irradiation does not produce results similar to those of Nagayama and Yamagata, contrary to the Examiner's allegation.

Matsuura's device is a liquid crystal display device, specifically a normally black LCD. See paragraph [0010] of Matsuura. Accordingly, persons of ordinary skill in the art would have known that exposing a liquid crystal of Matsuura's LCD to a laser would result in a serious damage in the liquid crystal, including a partial evaporation of the liquid crystal. The only way to repair a defective pixel in Matsuura's LCD device is cutting electrical connection to that defective pixel so that the defective pixel does not transmit light in the background of Matsuura's normally black LCD. This is exactly what Matsuura does, i.e., disconnecting the entire pixel having a defective portion from its pixel selection FET switch. See paragraph [0026].

Accordingly, Matsuura's laser repair of the wiring connection has nothing to do with laser repair of a light emitting portion of an EL device where the electroluminescent layer of a pixel can be locally repaired by laser beam irradiation, such as the claimed method of repairing an electroluminescent display panel. It is true that Nagayama and Yamagata teach a laser repair of an EL display device. However, neither Nagayama nor Yamagata discloses an indirect laser

irradiation of a foreign substance within the pixel having a foreign substance, as the Examiner admits. Matsuura's disconnection of the entire defective pixel has nothing to do with laser repair of an electroluminescent layer within a pixel, as explained above.

For the Examiner to understand this point, applicants have amended claim 1 to state that the laser beam is not directly incident on the detected foreign substance but is still incident on a portion of the electroluminescent element having the foreign substrate thereon so that other portion of the electroluminescent element having the foreign substrate thereon emits light.

The rejection of claims 1-7 under 35 USC 103(a) on Nagayama, Yamagata and Matsuura should be withdrawn because they do not teach or suggest the claimed invention as a whole.

The remaining obviousness rejection of claims 5 and 6, separate from the above rejection, relies on Nagayama, Yamagata and Matsuura and thus should be withdrawn as well because Nagayama, Yamagata and Matsuura do not provide the teachings for which they are cited.

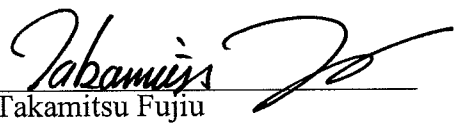
In light of the above, a Notice of Allowance is solicited.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952**, referencing Docket No. **606402016100**.

Respectfully submitted,

Dated: May 4, 2009

By:


Takamitsu Fujiu
Registration No. 63,971

Morrison & Foerster LLP
1650 Tysons Boulevard, Suite 400
McLean, VA 22102-3915
Telephone: (703) 760-7751
Facsimile: (703) 760-7777